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pale brown (sides of thorax more rounded than in *C. exaratus*). Russian America ♀. 17. *dolabratus* Payk.

•56. Elongate oval; thorax with extremely fine anastomosing rugosities, sides almost straight; lines of elytra moderate; legs pale brown, thighs slightly darker. Greenland ♂ ♀. 18. *groenlandicus* Aubé.

§§ Sides of thorax strongly rounded, sinuate near the anterior angles, which are strongly acuminate.

•60. Elongate oval; thorax feebly punctured towards the base, with scarcely perceptible rugosities; lines of elytra deep, moderately approximate; legs pale brown, thighs darker. Greenland ♀. 19. *drewseni* Lec.*

b. Elytra not striate transversely: RANTUS Esch.

Thorax pale, with two dark spots placed transversely:

•47. Elongate oval, elytra irrorated with black and pale; prosternum and legs pale brown. Middle States and Canada. *Col. maculicollis* Aubé.

20. *binotatus* Harris.

•47. Elongate oval; elytra irrorated with black and pale; prosternum and hind legs black, or very dark brown. Oregon and Russian America.

21. *divisus* Aubé.

•41. Elliptical, moderately convex; thorax pale yellow, with the front and hind margins broadly black; elytra irrorated with black and pale. Lake Superior, Canada, Hudson's Bay Territory, Oregon. 22. *agilis* Aubé.

B. Front and middle tarsi of male very slightly dilated: COLYMBETES Clairv.

•50—•53. Elliptical very slightly convex, above dark brown, shining; sides of thorax paler; elytra with a subbasal transverse line, three narrow vittæ on each, and the lateral margin pale. Middle and Southern States. *Dytiscus calidus* Fabr.; *Col. teniolis* Say; *Hydaticus meridionalis* Mels.

23. *calidus* Aubé.

Note on the Species of BRACHINUS inhabiting the United States.

BY JOHN L. LE CONTE, M. D.

All the species of *Brachinus* found within our Territory are very similar in color; the head, thorax and legs are ferruginous, and the elytra are of a dark blue, blackish, or greenish-blue color; the under surface of the trunk, and the 3d and following joints of the antennæ, vary in color, according to species and individuals, being sometimes nearly black, sometimes of the same color as the head and thorax. The form and sculpture of the thorax differ very much in the various species, and it is upon the characters derived from that region of the body that I have relied principally in distinguishing the forms, which I consider as entitled to rank as species, in the table given below.

It may be alleged that the synoptic phrases are too short to enable the so-called species to be recognized; I can only say that as I have endeavored to express the essential differences between the forms that I have recognized, and as the forms, colors and sculpture, except as noted, are identical, any dilatation of the phrases would be mere surplusage.

I must also add that I consider the species of this genus very decidedly opinative, and that I am only impelled to the publication of this note by the necessity of giving names to a certain number of recognized forms, and of placing as synonyms some which I formerly considered as distinct, but which increased collections have since shewn to be varieties.

* I have dedicated this very curious species to Mr. Chr. Drewsen, the distinguished entomologist of Copenhagen, by whom it was sent to me, with several specimens of *C. groenlandicus*.

- A. Large species, with the thorax punctured and the hind angles divergent; the elytra costate, gradually widened behind, with the humeri distinct, but rounded:

Thorax scarcely longer than wide; sides much rounded in front:

·58. Antennæ and abdomen not infuscated. Southern and Western States.

tormentarius Lec.

·61. Trunk blackish-brown; middle of metathorax ferruginous; antennæ with the 4th and following joints darker. Southern States.

alternans Dej.

·61. Thorax considerably longer than wide, sides less rounded than in the preceding; abdomen darker at the sides. Southern States. ?*B. deyrollei* Ferté. *strenuus* Lec.

- B. Moderate sized species; elytra gradually widened behind, costate, with the humeri indistinct; antennæ and abdomen dark.

·45—·53. Thorax elongate, punctured, hind angles not prominent. Southern States. Var. *viridipennis* Dej.; *viridis* Lec.; *lecontei* Lec.

perplexus Dej.

·45. Thorax sparsely punctured, hind angles prominent. Southern and Western States. *americanus* Lec.

- C. Moderate, or rather large species; elytra but slightly wider behind, costate, with the humeri distinct; thorax sparsely and finely punctured, with the hind angles prominent; sides of abdomen a little darker:

·45—·55. Thorax very wide in front, very suddenly narrowed behind. Middle and Western States, as far as New Mexico. *ballistarius* Lec.

·44—·50. Thorax more gradually narrowed behind. Found in the whole of the Atlantic district. *cyanopterus* Lec.; var. *sufflans* Lec.; *perplexus* Lec.; *librator* Dej.; *similis* Lec. *fumans* Dej.

- D. Smaller species; elytra broad, wider behind, strongly costate, humeri distinct; thorax opaque, rugose and punctured, hind angles slightly prominent; abdomen not infuscated.

·30. Thorax rather long; elytra glabrous, the grooves almost with single series of punctures. California and Arizona. Var. *lecontei* Motsch.

costipennis Motsch.

·35. Thorax shorter, sparsely punctured; elytra pubescent at the sides. California. *tschernikhii* Mann.

·35. Thorax shorter, densely punctured; elytra punctulate, pubescent. California and Arizona. *carinulatus* Motsch.

- E. Smaller species; thorax usually sparsely punctured, not longer than wide, very strongly constricted behind; elytra wider behind, convex, humeri distinct.

a. Hind angles of thorax very prominent:

·40. Thorax rugous, almost opaque; elytra moderately costate; beneath dark ferruginous. New Mexico, Arizona and Lower California.

fidelis Lec.

·40. Thorax scarcely rugous, sparsely and strongly punctured; elytra strongly costate; abdomen scarcely darker at the sides. Kansas.

kansanus Lec.

·32—·37. Thorax sparsely and finely punctured; elytra scarcely costate; antennæ and abdomen usually slightly infuscated. Middle, Western and Southern States. *conformis*† Lec.; *velox* Lec.; var. ?*cephalotes* Dej.

cordicollis Dej.

[Dec.

b. Hind angles of thorax moderately prominent :

·34—·37. Antennæ, tip of tibiæ, tarsi and trunk dark brown ; thorax scarcely punctulate ; elytra scarcely costate. Kansas. *stygicornis* Say.

c. Hind angles of thorax very slightly prominent :

·27—·35. Elytra scarcely costate ; antennæ and abdomen not infuscated. Middle and Western States, Kansas. *cordicollis*† Lec. . *rejectus* Lec.

F. Smaller species ; thorax longer than wide, convex, constricted behind, hind angles prominent ; elytra, humeri distinct.

a. Epipleuræ as usual of the color of the elytra :

·29. Elytra oblong, scarcely dilated behind ; abdomen not infuscated. Middle States. *Aptinus janth.* Dej. *janthinipennis* Lec.

·36. Elytra broader quadrate, dilated behind, slightly costate ; trunk infuscated. Southern and Western States. *quadripennis* Dej.

·18—·25. Elytra dilated behind, not costate ; abdomen dark brown. *medius* Lec.

b. Epipleuræ pale testaceous ;

·33—·39. Thorax less narrowed behind than usual ; sides of metathorax and abdomen, and knees dark. Southern States and Arizona, as far as Colorado River. *lateralis* Dej.

G. Small species ; thorax longer than wide, hind angles not prominent ; elytra wider behind, humeri indistinct.

·28—·36. Thorax very broadly rounded on the sides in front ; sides of abdomen dark. Middle and Southern States. *cephalotes*† Lec. *ovipennis* Lec.

a. Thorax more strongly rounded on the sides in front :

·30—·36. Abdomen dark brown. Middle, Southern and Western States. *patruelis* Lec. *conformis* Dej.

·21. Abdomen not infuscated. Middle States. *pumilio* Lec.

Contributions to Organic Morphology :—Containing the mathematical imitation of the egg of *PLANORBIS CORNEUS* and of *EPIORNIS* ; and upon the resemblances between Mathematical, Acoustic, Electric, Optical and Organic Figures ; with historical and other remarks.

BY JOHN WARNER, A. M.

PREFACE.

In a work published several years ago, I endeavored to make some contribution to the knowledge of Organic Morphology.* Among other matter, the work contained the results of investigations made to determine the coincidence in form between sections of hen's eggs and a curve there proposed. In the present paper, it is designed to extend these investigations, and to notice some other subjects of interest. Some use will be made both of original and selected matter contained in the work referred to, and other citations will be added, which seem appropriate in treating a branch of science not yet possessing a classified and independent literature.

MORPHOLOGICAL LITERATURE.

Numerous authorities might be cited, bearing upon the general subject of our research, and containing information and suggestions worthy of study ;

* Studies in Organic Morphology, by John Warner. J. B. Lippincott & Co., Philadelphia, 1867. 1862.]